

New Empirical Term in the Moon's Longitude.

By P. H. Cowell.

Tisserand, *Mécanique Céleste*, vol. iii. p. 417, after tabulating the Moon's errors from 1620 to 1888 and discussing Newcomb's empirical term of 273 years, says :

"La représentation est satisfaisante en général ; toutefois, il subsiste des indices d'une autre inégalité, à période moindre, et ayant un coefficient de 2'' à 3''."

I believe that I have succeeded in fixing the period of this term at 69 ± 3 years. Its coefficient is about 2'', and it reaches a maximum value about 1825.

At the earliest opportunity I hope to publish a full analysis.

M. Radau has kindly referred to his calculations of planetary inequalities, and he has informed me that the two terms with arguments $g - 14E + 9\tau$ and $\omega + 8E - 5V$, which are approximately of the right period, have insensible coefficients.

A Remarkable Nebula in Cygnus connected with Starless Regions.

By Dr. Max Wolf.

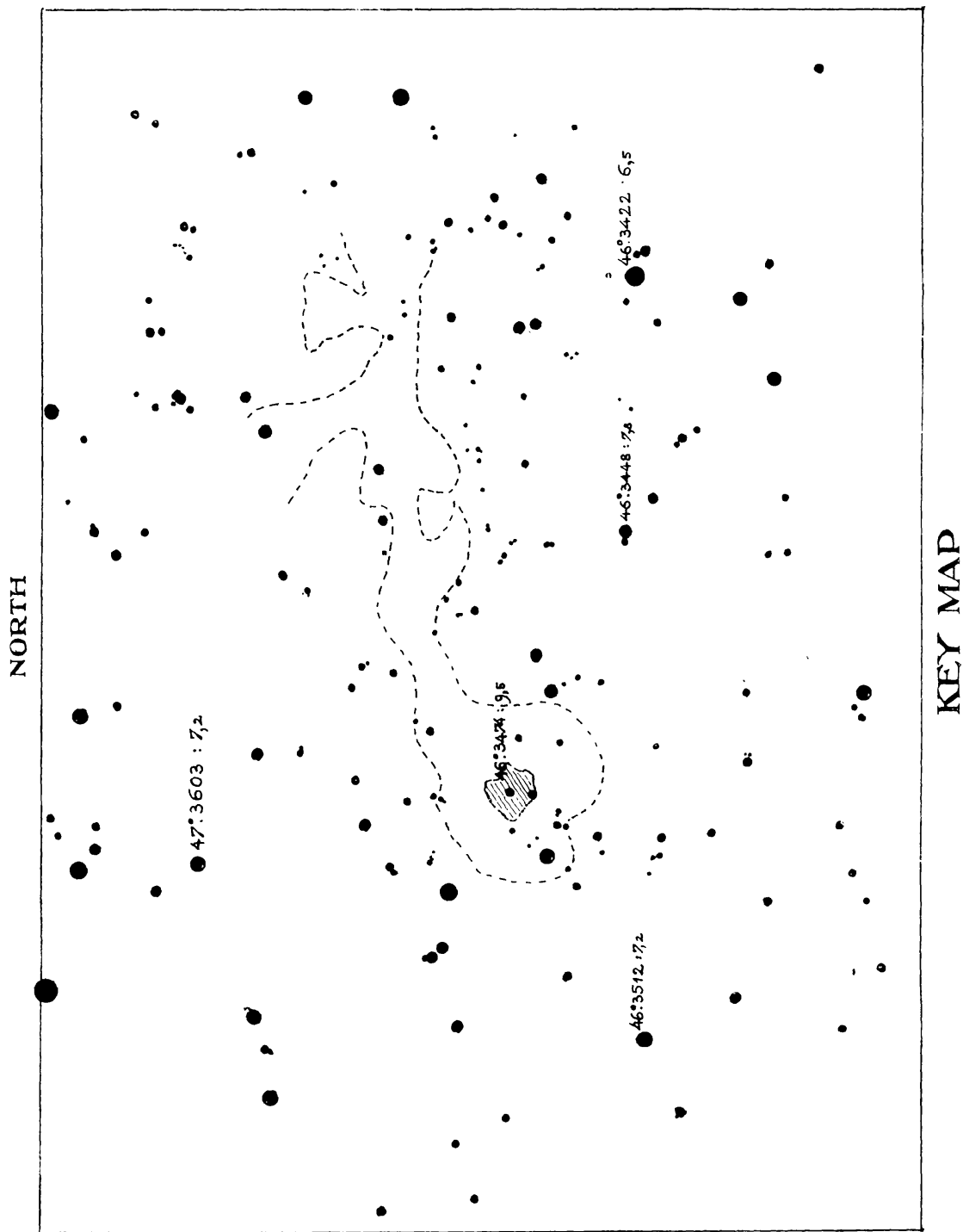
In earlier papers I have pointed out that there seems to exist a curious relation in the distribution of extended nebulae and fainter stars. I had found that all extended nebulae discussed at our Observatory are situated in the interior of regions containing only a very small number of faint stars. It afterwards appeared that Sir William Herschel had some idea of this remarkable fact. We have been able to show that the two great *Orion* nebulae, as well as the North America nebulae in *Cygnus*, are surrounded by and are situated at the edge of regions nearly void of faint stars. My assistant, Mr. Kopff, has published an exact enumeration of the stars about these objects,* from which it is proved that nearly all faint stars have disappeared from the immediate surroundings of these nebulae, though they are about ten times more numerous both in the nebulae themselves and far outside. The few stars remaining in the lacunae belong to the brighter magnitudes.

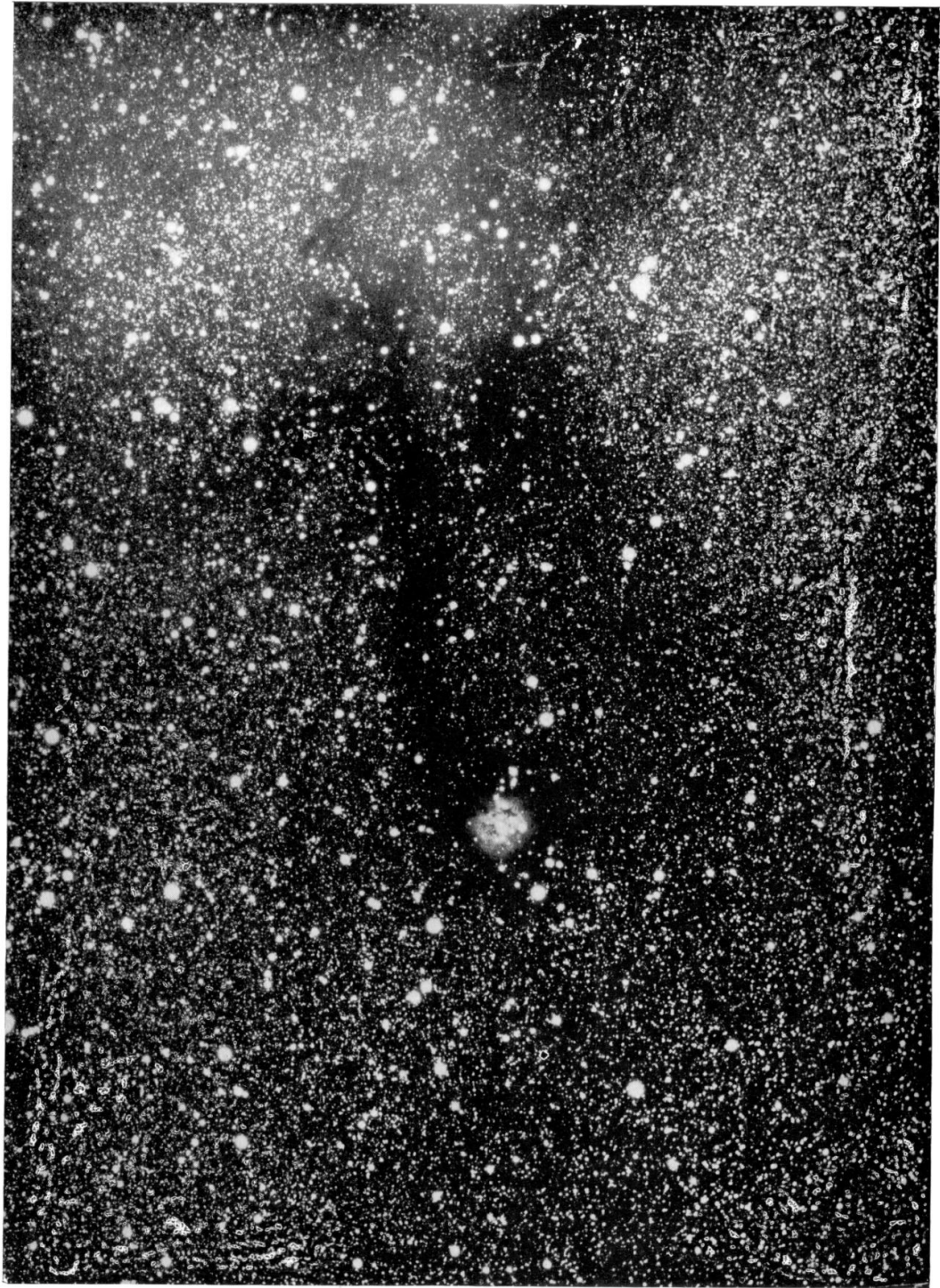
Similar relations seem to exist for all extended nebulae. In addition to the above named the same is the case with regard to the following objects :

The great nebula Messier 8, *Sagittarii*.

"	"	"	20,	"
"	"	"	γ <i>Scuti</i> .	
"	"	"	ρ <i>Ophiuchi</i> .	
"	"	"	δ	"

* *Publ. d. Astrophys. Obs. Königsstuhl*, i. 177.





DETACHED NEBULA IN CYGNUS.

PHOTOGRAPH BY DR. MAX WOLF, HEIDELBERG.

The great nebula north of *An'ares*.

"	"	ν <i>Scorpii</i> .
"	"	η <i>Carinae</i> .
"	"	δ <i>Monocerotis</i> .
"	"	ξ <i>Persei</i> .
"	"	β <i>Cassiopeiae</i> .
"	"	near γ <i>Cygni</i> , &c.

All these examples show the above-mentioned relation, and also the fact that, though partially or wholly surrounded by void zones, the nebulae are generally placed at the end of a longer extended lacuna, so that we are led to the impression that we here see the result of some cosmic movement, the end of the lacuna showing the place where this unknown event began.

I had already found something similar in the Triple Cave of *Aquila*, but not typical enough for discussion. The photograph accompanying the present paper shows an extremely curious example of these relations.

This nebula is situated about 2° south-east of π^2 *Cygni*, and involves in its centre the 9.5 mag. star B.D. +46°, 3474, the coordinates of which are given by Argelander for 1855.0, viz. :

$$\text{R.A.} = 21^{\text{h}} 47^{\text{m}} 54^{\text{s}}.4 \quad \text{Decl.} = +46^\circ 34'.9.$$

A second *Durchmusterung* star is enclosed by the same nebula, somewhat more south ; it is the 9.3 mag. star B.D. +46°, 3475, which has the position :

$$\text{R.A.} = 21^{\text{h}} 47^{\text{m}} 55^{\text{s}}.3 \quad \text{Decl.} = +46^\circ 30'.9.$$

This star is situated near the southern edge of the nebula. The object was photographed by myself for the first time on 1894 July 28 with a 6-inch camera. The last picture obtained, which is reproduced here, was taken 1904 July 10 with the 16-inch camera, with 240 minutes' exposure. The reproduction (Plate 18) is made from a part of one of the original plates on the scale of $1^\circ = 60$ mm.

The nebula is somewhat round and is about $10'$ in diameter. It is of a very complicated structure, somewhat resembling the trifold nebula in *Sagittarius*. It is placed centrally in a very fine lacuna, void of faint stars, which surrounds the luminous cloud like a trench. The most striking feature with regard to this object is that the star-void halo encircling the nebula forms the end of a long channel, running eastward from the western nebulous clouds and their lacunae to a length of more than two degrees.

The channel is somewhat similar to one of the three arms of the *Aquila* Triple Cave (reproduced in *Knowledge*, xxv. p. 203).

The nebulous clouds to the west, partly visible at the right edge of the picture, are placed near a region likewise poor in faint

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stars, a large barren tract spread over many square degrees from south to north in the Milky Way.

In regarding this nebula we are led to speculation. We might suppose the nebula were detached from the great western nebulous cloud, and as if it, or the cosmic process connected with its origin, had swept the long channel through the star-crowds of the Milky Way. Or is there a dark mass following the path of the nebula, absorbing the light of the fainter stars? We are far from knowing enough to settle these questions; but one thing we learn anew from this interesting nebula, and in a very illustrative manner—that the nebula is geometrically encircled by a ring which is void of faint stars, and that this lacuna is the end of a long starless hole.

Königstuhl Astrophysical Observatory :
1904 August.

Dr. Brooks's Discovery of his Twenty-fourth Comet.
By William R. Brooks, D.Sc.

I have the honour to announce to the Society the discovery of a new comet on the evening of April 16 last, in the constellation *Hercules*. Its position at the moment of discovery, 9^h 50^m standard mean time, was R.A. 16^h 58^m 10^s; declination north 44° 10'.

Its cometary character was detected the instant the object was swept into the telescopic field, for it had all the appearance of a great comet in miniature, a head with stellar nucleus and a tail. I enclose herewith a drawing of the telescopic field at discovery (fig. 1). When first seen the comet was nearly midway between the stars D and E, and also nearly on a line drawn from the star A to B. The rate of motion was quite slow, but in about an hour it had moved into a line drawn from A to C.

The following evening was clear, and an observation at 8^h 15^m made the comet's position R.A. 16^h 55^m 5^s, Decl. +44° 48', giving a daily motion of about three-quarters of a degree in a north-westerly direction.

It was a conspicuous object in the 10-inch refractor with which it was discovered, the nucleus being at times quite prominent and sparkling, while the tail in good air could be readily seen to the edge of a half-degree field. The comet was always visible in the 3-inch finder. It must really be quite a large comet, for at discovery its distance from the Earth was not far from three hundred millions of miles, and it had passed perihelion several weeks before. With two exceptions its perihelion distance is greater than any other known comet, the mean of several computations by different computers being 2.707. At first an elliptical orbit was computed, with the remarkably short period